CB TUBE SUBSTITUTION DIRECTORY

381 REPLACEMENTS FOR THE MOST POPULAR CB TUBES

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CB rigs have the most uncanny knack of dropping dead at just the wrong moment—such as when you are just about to take a long motor trip, or (horrors) when you are in a small town where the only service shop within 100 miles never even heard of CB.

The most common problem you will probably ever have with your CB rig is when a tube "goes west," except, of course, you have a transistorized rig. Chances are, like the great majority of rigs today, yours is of the tube species.

Anyway, when the only 6U8A with a hundred miles goes up in smoke, what can be done about it? Or what happens if your base station pops a tube on a Sunday, or in the evening after the service shops close up? Or what happens if your local shop is open, if he knows about CB, but he is temporarily out of the one tube you need? Do you convert your CB rig into a boat anchor? Do you consider switching over to smoke signals as a means of communications? If that's what's troubling you, Bunky, S9 has the solution with this handy guide of almost 400 direct substitutions for popular CB tubes.

Now if "Old Nell" blows a tube you can swipe one from your TV or Hi-Fi set until another of the original type can be obtained at the nearest tube emporium. Whatsmore, if you're stuck in the boondocks where the local service shop doesn't carry the tube you need, you can shake the S9 CB tube substitution chart in the guy's face and make his come up with something (anything!) that will get you back on the megacycles.

The substitutions on our chart are all *direct* substitutions and will require no rewiring work on your rig. Substitutions in parentheses are to be used only as a last resort, when all other possible tubes are unavailable; they just won't give you anywhere near the performance of the original tube, but they will do a heckuva lot of a better job than the dud tube which you just threw angrily into the round file.

Tubes shown in **bold face** type are equal to, or in many cases better than, the tube which they replace. These tubes, on our list, include special industrial type tubes used in missiles, computers and other precision electronic gear. Their advantages usually include ruggedized construction, extra long life, and the fact that the tube will die *suddenly* when "it's time to go," rather than die away slowly giving you inefficient operation for months (as is usually the case with "standard" tubes). Be prepared to spend a few extra scheckles for some of these industrial version tubes,

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S9 CB TUBE SUBSTITUTION CHART

ORIG.	REPLACE WITH
0B2	**6074 6627**
0C3	VR-105
5U4	**U52** 5AR4 5AS4 5AU4 5AW4 5AX4 5AZ4 5DB4 5R4 5T4 5V4 5W4 5Y3 5Z4 **5931**
6AK5	EF95 6AG5 6AH6 (6AJ5) 6BA6 6BC5 6BH6 6BJ6 6CB6 6CB5 6CE5 6CF6 6CY5 6EA5 6EV5 **#62 403B 1220** 5590 **5591 5595 5654 6096 6968** (9001) 9003
6AL5	D717 EB91 6EB5 **5726 6058 6097 6663 7631**
6AQ5	**EL90** (6BF5) **6BM5 6005 6094 6095 6669**

6AU6	EF94 (6AG5) (6AJ5) (6AK5) (6AK6) 6BA6 6BD6 **#675** (5590) (5591) **5749 6136 7543** (9001) (9003)
6AV6	EBC91 6AQ6 6AT6 **6BK6** 6BT6 **6066**
6AW8	6AU8
6BA6	EF93 6AL5 6AU6 6BC5 6BD6 6CB6 6CG6 **#675 5749 6136 6660 6661 7496 7543 9003**
6BC8	EF93 X155 6BK7 6BS8 6BQ7 6BX8 6BZ7 6BZ8 6HK8
6BD6	6BA6 6CG6 **#675** 5749
6BE6	EK90 6BY6 6CS6 **5750 5915 6660 7036 7502**
6BH6	6AW6 (6BC5) 6CB6 6CF6 6DC6 **#62 6265 6661**
6BH8	6AU8 6AW8 6BA8
6BJ6	6AS6 6BA6 (6BC5) 6BH6 **#625 6662 7694**
6BJ8	6BN8
6BK7	X155 6BC8 6BQ7 6BS8 6BX8 6BZ7 6BZ8 6HK8
6BN8	6BJ8
6BQ5	**EL84 N709 7189 7320**
6BQ7	**ECC180** X155 6BC8 6BK7 6BS8 6BX8 **6BZ7** 6BZ8 6HK8
6BS8	X155 6BC8 6BK7 6BQ7 6BX8 6BZ7 6BZ8 6HK8
6BZ6	**6CB6** 6DC6 **6DE6** 6DK6 **#62**
6C4	EC90 (6AV6) (6BF6) (6BK6) (6BT6) (6BU6) **6100 6135** (9002)
6CB6	EF190 6AG5 (6AJ5) 6AK5 (6AN5) (6AS6) 6AW6 6BC5 (6BH6) 6BZ6 **6CF6 6DE6** 6DK6 6HQ6 **#62** 5590 5591 5654 **6676 7732** (9001) (9003)
6CF6	EF190 6AG5 (6AJ5) 6AK5 6AW6 6BC5 6BH6 6BZ6 6CB6 6DC6 6DE6 6DK6 5590 5591 5654 (9001) (9003)
6CL6	**2014 6197 6297 6677**
6CW4	6DS4 **7895**
6CW5	EL86
6CX8	6EB8
6CZ5	6DT5 6DW5
6DC6	6AW6 6BH6 6BZ6 6CB6 6CF6 6DE6 6DK6 **#62**
6DS4	6CW4 **7895**
6EA8	6GH6 6GJ8 6U8A
6EH7	EF183 6EJ7
6FY5	EC97 6ER5
6GH8	6AX8 6EA8 6GJ8 6U8A
6GW8	ECL86
6J6	ECC91 **5844 5964 6030 6045 6099 6101 6927 7244**
6RHH8	6DJ8
6T8	6AK8 6R8
6U8A	ECF82 6AX8 6BL8 6EA8 6GH8 6GJ8 **1252 6678 7731**
6X4	EZ90 U707 **6AV4** 6BX4 **5993 6063** 6202
12AQ5	12BM5
12AT7	**B739 ECC81** 12AU7 12AV7 12AX7 12AY7 12AZ7 12BH7 **12DF7 6060 6201 6671 6679 7492 7728**
12AU6	HF94 12BA6 12BD6 **#1275**
12AU7	B749 ECC82 12AT7 12AV7 12AX7 12AY7 12DF7 **5814 5963 6067 6189 6680 7318 7489 7730**
12AV7	12AT7 12AU7 12AX7 12AY7 **12AZ7** 12BH7 **5965 6829**
12AX7	B759 ECC83 12AD7 12AT7 12AU7 12AV7 12AY7 (12AZ7) 12BH7 12BZ7 **12DF7** 12DM7 12DT7 **5721 5751 6057 6681 7025 7494 7729**
12AY7	12AT7 12AU7 12AV7 12AX7 (12AZ7) 12BH7 12DF7 **6072**
12BA6	HF93 12AU6 12BD6 **#1275**
12BH7	12AT7 12AU7 12AV7 12AX7 12AY7 12AZ7 12DF7 **6913**
12BY7	EL180 **12BV7** 12DQ7 **7733**
ECC83	12AX7 **12DF7 5721 5751 6057 6681 7025 7494 7729**
EZ90	U707 **6AV4 5993 6063 6202**

TUBE SUBSTITUTION

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although many of the "four digit" types are popping up on the military surplus market at budget prices.

Tubes shown with a #-sign before their number are "Nuvistaplugs." These are complete plug-in units circuits which consist of 2 Nuvistors in a cascode amplifier circuit. They are for replacement in the "front end" of the receiver section of a transceiver.

Tubes *not* indicated by parentheses *or* bold face type are "average" good replacements for the original types. They should approximate the original tube's performance, but it would be best to replace them with the original types when convenient.

You will notice that some tubes have designations such as ECC81, EL84, X155, etc., etc. These are foreign types which are popular in Hi-Fi equipment in this country. In many cases they are excellent permanent replacements for tubes in the audio or modulation sections of a CB rig.

Some tubes, you will notice, are not listed here. This is because there just aren't replacements for each and every single type of tube. If you have a CB rig which contains the following, it is suggested that you keep a spare around the shack: 6AN8, 6FM8, 12BW4, 6AZ6, 6AZ8, 6BJ7, 6EM5, 6CL8, 5763, 6BH7, 12AB5, and 6EQ7. There are others too, naturally. We suggest that you dig out your rig's instruction manual and see what you've got.

You might find it handy to list the replacements for all of your rig's tubes right on the inside cover of the instruction manual. This will save you the exasperating experience of trying to find this issue of S9 when you need it (we understand that some despicable people borrow S9's and "forget" to return them).

Do not attempt "reverse" substitutions. That is, replacing dead tubes shown in the right hand column on our chart with tubes shown in the left hand column.

Editor's note. The information contained in this article was compiled from material supplied by tube manufacturers. S9 Magazine presumes that this information is correct, but does not guarantee the degree of results which will be obtained by the application of the information. It must be remembered that slight electrical and mechanical differences may exist between the "original" tubes and the suggested substitutions.

ANTENNAS

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and assume a smooth flat terrain and an average amount of atmospheric bending. Of course, terrain conditions and obstacles make each location a specific one. The above figures, as just mentioned, are related to flat terrain. If your average terrain is several hundred feet above your local surroundings you can expect an even greater range of transmission. On occasion, more often at night, atmospheric bending is very pronounced and transmission paths of fifty miles or greater do occur.

The estimates do point out the influence of antenna height on the range of transmission. Furthermore they indicate that with a minimum of equipment, reliable communications should be possible at least over the calculated range. With gain antennas, low-noise receivers, and a good location reliable results can be obtained beyond this figure. Under most circumstances, reliable results beyond twenty-five to thirty miles is hard to come by even under idealized conditions.

INTERVENING OBSTACLES

In metropolitan areas the influences of tall buildings, long bridges, and other large metallic surfaces are quite decided. Weak and strong signal locations develop at random because of reflections and the arrival of more than one signal at a given location.

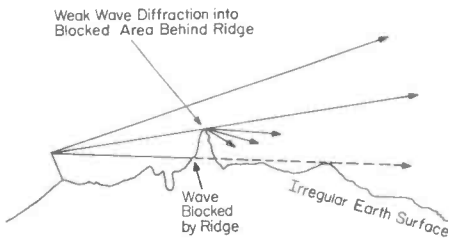

Fig. 7. Wave Diffraction.

There is some diffraction of radio waves over and around obstacles. Fig. 7 is an example of mountain-top diffraction. It might at first be expected that a high intervening hill would result in a complete black-out of communications at its rear. However, when a signal passes over a ridge there is some additional bending of the wavefront which causes it to dip down on the other side. Although the signal is reduced in its strength it is never the less present, usually at a useful level if within the signal line-of-sight range. S9